UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,422	12/19/2005	Kai Sorge	AG009	6390

7590   05/05/2011

Gerlinde M Nattler
Continental Teves Ic.
One Continental Drive
Auburn Hills, MI 48326

EXAMINER
COMLEY, ALEXANDER BRYANT

ART UNIT	PAPER NUMBER
3746	

MAIL DATE	DELIVERY MODE
05/05/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _28 February 2011_.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _13,15 and 17-24_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _13,15 and 17-24_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _December 19th, 2005_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☒ None of:

       1.☒ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

FINAL REJECTION

Status of the Claims

1.   The Examiner acknowledges Applicant's amendments, arguments, and remarks filed

with the Office on February 28th, 2011 in response to Non-Final Office Action mailed by the

Office on August 31st, 2010. Per Applicant's response, Claims 13, 19-20, 22, and 24 have been

amended. Claims 1-12, 14, and 16 remain cancelled due to a prior amendment. Therefore,

Claims 13, 15, and 17-24 still remain pending in the instant application and currently being

examined. The Examiner has carefully considered each of Applicant's amendments and

arguments, and they will be addressed below.

### Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.   **Claims 13, 17-18, 20, & 24** are rejected under 35 U.S.C. 102(b) as being anticipated by

United States Patent No. 6,212,451 to Kutscher et al. to a Pneumatic Suspension Leveling

System for Vehicles.

Fig. 1
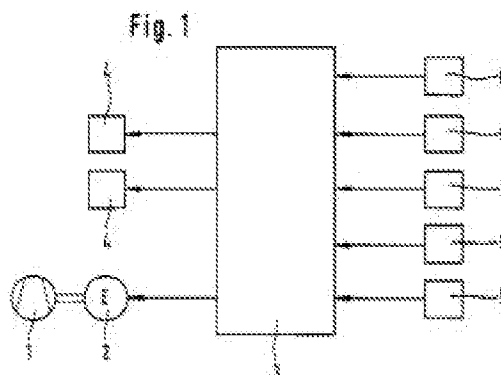
Regarding Independent **Claim 13**, and in reference to Figure 1 shown immediately

above, Kutscher et al. (Kutscher) discloses a compressor control system that cycles a compressor

unit on or off based on the relationship existing between a compressor temperature and threshold

values. The threshold values are utilized in a mathematical physical model stored in memory of

a control unit for carrying out thermal modeling analysis via characterization of heating/cooling

properties of the compressor. Specifically, Kutscher's control system utilizes thermodynamic

properties and relationships existing between the compressor and the surrounding air in order to

calculate the on-time (or off-time) of the compressor, and ultimately, arrive at a desired

compressor temperature (See Column 2, Lines 13-32) Essentially, Kutscher's control system is

designed such that compressor overheating is effectively avoided during all periods of operation.

Kutscher states that environmental operating parameters (i.e. air temperature, mounting position,

etc) will vary based on the environment in which the compressor is placed (See Col. 1, Lines 56-

63) As such, the surrounding air temperature and other environmental parameters (i.e. cooling

and heating properties of the compressor) directly affect the compressor temperature's rise and

fall in the same manner as Applicant's invention, and therefore, directly affect the method of

estimating and regulating steps involved for calculating the compressor temperature. Kutscher

discloses "These temperatures are preferably detected by an appropriate sensory mechanism,

whereby signal values correlating thereto are generated, which the control device processes to

determine air temperature in the compressor environment. Accordingly, air temperature in the

compressor environment is not measured directly in this compressor environment but, rather, is

indirectly determined with the aid of a corresponding, modeling analysis based on the outside

vehicle temperature and vehicle engine air-intake temperature. In this manner, recourse can be

made in particular to sensory mechanism already existing on the vehicle with which said

temperatures are measured in any case." (Column 2, Lines 39-51) In this disclosure, Kutscher

discloses an indirect method of determining compressor environmental conditions (which

indirectly affect a compressor's actual temperature). Kutscher then goes on to describe how this

mathematical model analysis (i.e. equations) regulate the compressor on-time amount by

utilizing surrounding compressor heating/cooling variables (see Col. 3, Line 36 – Col. 4, Line

62). The Examiner must assert that Kutscher's modeling analysis and equations are

mathematical physical models which are stored in the control unit and function to characterize

the cooling and heating properties of the compressor since they specifically utilize the

compressor operating conditions (i.e. surrounding air temperature) to accurately determine when

and how to operate the compressor to prevent overheating. Kutscher more clearly describes the

methodology of the control system later in the disclosure, and even specifically discloses

calculations being made to determine the relative compressor temperature based on

environmental conditions (see col. 3, lines 35-46) Consequently, the Examiner must assert that

Kutscher's system indirectly calculates the temperature of the compressor using measured

environmental parameters and heat transfer rates (i.e. a heating function relative to the

surrounding air) existing between the compressor and the air. Therefore, because Kutscher

measures and regulates the compressor's operation (i.e. temperature) using the direct correlation

existing between the surrounding environment temperature and the temperature of the

compressor itself, Kutscher control system does, in fact, provide an indirect, and cyclic, method

of calculating the temperature of the compressor.

4.   In regards to dependent **Claims 17-18**, Kutscher discloses a compressor

operating process that determines a set of physical compressor-influencing variables

(i.e., ambient temperature of surroundings, air flow speed), uses these values to

calculate an overall compressor temperature, and then determines, based on these

values and current operating requirements, exactly how the compressor should function

at a given instant in time. Applicant's use of subtracting a cooling value or adding a

heating value to acquire the calculated relative temperatures is a step that would

naturally occur in such a system process. In particular, Kutscher discloses "The heat

transfer conditions prevailing between the compressor and the air enveloping the latter

can depend to a large extent on the air temperature and air flow speed prevailing in the

compressor environment. With a preferred special embodiment of the pneumatic

suspension leveling system in accordance with the invention, therefore, the control

device is able to vary the on-time duration of the compressor as a function of the air

temperature and air flow speed prevailing in the compressor environment." (Column 2,

Lines 22-30) In regards to dependent **Claim 20**, Kutscher discloses using initial relative

temperature values that correspond to ambient air temperature surrounding the

compressor. Kutscher also specifically notes that such starting values should be based

on the particular compressor model to be used (See Column 3, Lines, 59-61; Column 4,

Lines 10-13; Column 4, Lines 27-29). In particular, Kutscher discloses "The following

values, for example, are possible as vehicle reference or starting operating parameters

or as environmental conditions of compressor operation with which base on-time

duration ED_{Basis} is determined: $G_{FG} = 50°$ km/h at $T_{AT} = 20°$ C and $T_{FT} = 60°$ C." (Column

4, Lines 51-55) Furthermore, in regards to dependent **Claim 24**, Kutscher's control

system is one that can initiate, or halt, compressor operation during various points in the

allowable temperature range between a minimum and a maximum temperature. In

particular, Kutscher discloses "The invention is based on the concept of selectively

varying the compressor on-time (relative and absolute), whereby the current on-time

duration in each case is matched to prevailing compressor operating conditions."

(Column 2, Lines 13-17) Kutscher further discloses the general operating conditions

that the compressor follows by stating "Preferably, on-time duration is decreased then

air temperature increases and/or air flow speed decreases and is increased when air

temperature decreases and/or air flow speed increases." (Column 2, Lines 29-33)

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

6.   The factual inquiries set forth in Graham **v.** John Deere Co., 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

    1.   Determining the scope and contents of the prior art.
    2.   Ascertaining the differences between the prior art and the claims at issue.
    3.   Resolving the level of ordinary skill in the pertinent art.
    4.   Considering objective evidence present in the application indicating obviousness
          or nonobviousness.

7.   **Claims 15, 19, & 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over

United States Patent to Kutscher et al. (6,212,451) to a Pneumatic Suspension Leveling System

for Vehicles in view of United States Patent to Meier et al. (6,799,950) to a Method and

Apparatus for Controlling a Compressor.
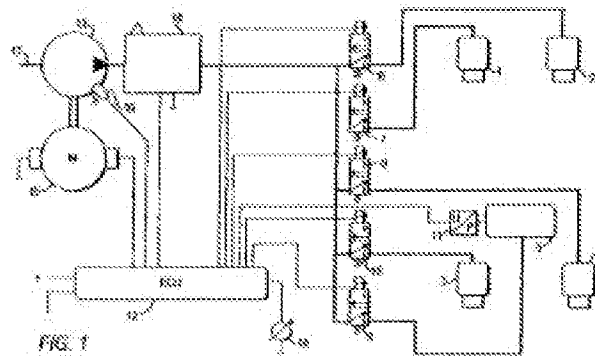
        In regards to dependent **Claim 15**, and in reference to Figure 1 shown

immediately above, the Meier portion of the combination specifically discloses

using the backpressure in the compressor system in order to accurately calculate

compressor temperature. In particular, Meier discloses "A method and apparatus

for controlling a compressor suitable for delivery of pressurized fluid to a

pressurized fluid system, wherein the delivery of the pressurized fluid to the

pressurized fluid system can be cycled on and off as a function of a temperature

signal received from a temperature sensor. The delivery of pressurized fluid is

turned off when the temperature signal exceeds a temperature limit value that is

based on the backpressure caused by the pressurized fluid system." (Abstract)

In regards to dependent **Claim 19**, the Kutscher portion of the combination

discloses the use of coefficient-based equations to determine the increments of

operational time for the compressor under different loadings and sensed

surrounding conditions. In particular, Kutscher discloses "On the basis of

conceptual models it is now possible for the control device 3 to calculate a signal

value S_{LT} from the signal values S_{AT} and S_{FT} made available to it which correlate

to the outside vehicle temperature T_{AT} and to the vehicle engine air-intake

temperature T_{FT} which correlates to the air temperature in the compressor

vicinity. Likewise, with corresponding conceptual models a signal value S_{LG} can

be calculated from the signal value F_{FG} correlating to the vehicle speed G_{FG}

which correlates to the air flow speed G_{LG} in the compressor environment."

(Column 3, Lines 36-44) Kutscher further explains the specific equations used,

and the influencing factors used for each (See Column 3, Line 46 – Column 4,

Line 50) From these equations, it is clear that Kutscher's "influencing variables"

serve the same purpose as applicant's "constant coefficient matrices" in that they

characterize the particular compressor used and its particular surroundings.

Furthermore, Kutscher discloses the claimed invention except for the specific

algebraic forms of the operating equations used. However, it would have been

an obvious matter of design choice to utilize such equation forms, since applicant

has not disclosed that such particular equations solve any stated problem or are

for any particular purpose, and it appears that the invention would perform

equally well with the similar equation forms seen in Kutscher. regarding

dependent **Claim 21**, Kutscher specifically describes using appropriate starting

values for the control system based on corresponding compressors used and

their environments. Kutscher also notes that such starting values are to be

based on the particular compressor model used (See Column 3, Lines, 59-61;

Column 4, Lines 10-13; Column 4, Lines 27-29) Therefore, Kutscher discloses

the claimed invention except for the particular initial relative temperature value of

"zero". However, it would have been obvious to one having ordinary skill in the

art at the time the invention was made to utilize an initial relative temperature of

"zero", since it has been held that discovering an optimum value of a result

effective variable involves only routine skill in the art. In re Boesch, 617 F.2d

272, 205 USPQ 215 (CCPA 1980) Therefore, to one of ordinary skill desiring an

efficiently operated compressor unit that avoids damage from overheating, it

would have been obvious to utilize the techniques disclosed in Meier in

combination with those seen in Kutscher in order to obtain such a result.

Consequently, it would have been obvious to one of ordinary skill in the art at the

time of the invention to modify the compressor control method of Kutscher with

the counterpressure readings seen in Meier in order to obtain predictable results;

those results being a more precisely controlled compressor that prevents

overheating while still avoiding complete reliance on direct temperature readings

for temperature estimations.

8.   **Claims 22-23** are rejected under 35 U.S.C. 103(a) as being unpatentable over United

States Patent to Kutscher et al. (6,212,451) in view of United States Patent to Meier et al.

(6,799,950) as applied to claims 15, 19, & 21 above, and further in view of United States Patent

to Jayanth et al. (6,758,051) directed to a Method and System for Diagnosing a Cooling System.

Regarding dependent **Claim 22**, the Kutscher-Meier portion of the

combination discloses the steps of applicant's method, with the exception of step

"c"; that step being the specific measurement of the compressor's voltage.

However, the additional Jayanth reference of the combination specifically

discloses the use of a voltage sensor in a compressor control system. In

particular, Jayanth discloses "The diagnostic system also includes either a

discharge pressure sensor or a condenser temperature sensor, an ambient air

sensor and a voltage sensor. The sensors provide information to the

diagnostic system to enable it to determine and indicate a system fault."

(Abstract) More particularly, Jayanth discloses "The demand signal for

compressor 10 is acquired by sensing the presence of supply voltage or by

having a system controller (not shown) supply a discrete signal representing the

demand. The demand signal and the signal received by logic circuitry 104 are

processed by logic circuitry 104 to derive the information about the trip frequency

of protector 54 and the average ON time and OFF time of compressor 10. Logic

circuitry 104 analyses the combination of current signals, the demand signal and

the derived protector trip frequencies to determine if a fault condition (i.e.

overheating or overload) exists." (Column 6, Lines 3-33) In regards to dependent

Claim 23, Kutscher substantially teaches the use, or omission, of an influencing

variable based on operating condition. Furthermore, applicant's claim essentially

describes that the use, or omission, of a particular variable based on compressor

operation. Therefore, Kutscher discloses the claimed invention except for

the specific multiplication step used to utilize (multiply by "one") or omit (multiply

by "zero") an influencing variable. It would have been obvious to one having

ordinary skill in the art at the time the invention was made to perform these basic

multiplications, since it has been held that omission of an element (multiplying by

zero) and its function in a combination where the remaining elements perform the

same functions as before involves only routine skill in the art. In re Karlson, 136

USPQ 184. Therefore, to one of ordinary skill desiring an accurately controlled

compressor system, it would have been obvious to utilize the techniques

disclosed in Jayanth in combination with those seen in the Kutscher-Meier

combination in order to obtain such a result. Consequently, it would have been

obvious to one of ordinary skill in the art at the time of the invention to modify the

compressor control system of the Kutscher-Meier combination with the voltage

detection sensors of Jayanth in order to obtain predictable results; those results

being a more precisely controlled compressor system that prevents overheating

by avoiding complete reliance on temperature readings for its temperature

calculations.

Response to Arguments

9.   Applicant's arguments filed August 17th, 2010 have been fully considered but they are not

persuasive. The Examiner's responses can be seen below.

10.   In regards to Applicant's argument that Kutscher does not disclose a compressor control

system that calculates the compressor temperature through use of indirect, cyclic methods, the

Examiner must respectfully disagree. As stated above in the analysis for Independent Claim 1,

Kutscher describe the use of a mathematical model analysis (i.e. equations) to calculate the

compressor temperature and then control the compressor on-time duration based on surrounding

compressor heating/cooling variables (see Col. 3, Line 36 – Col. 4, Line 62). In these

disclosures, Kutscher specifically discloses a calculation process utilized by the control unit 3

based on sensor signals received from the various sensors. The Examiner must assert that

Kutscher's modeling analysis, equations, and calculations clearly constitute a mathematical

physical model designed to characterize the cooling and heating properties of the compressor

since they specifically utilize the surrounding compressor operating conditions (i.e. surrounding

air temperature) in order to accurately determine when and how to operate the compressor to

prevent overheating. Hence, Kutscher measures the temperature of the intake air and the

surrounding air proximate the compressor via a thermal mathematical model, and can then

calculate the temperature (i.e. a relative temperature) of the compressor itself based on

surrounding temperature conditions.

Conclusion

11.   Applicant's amendment necessitated the new ground(s) of rejection presented in this

Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

        A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this

final action.

Contact information

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to ALEXANDER B. COMLEY whose telephone number is

(571)270-3772. The examiner can normally be reached on M-F 7:30am - 5:00am EST

(Alternate Fridays Off). If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, Devon C. Kramer can be reached on (571)-272-7118. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alexander B Comley/   /William H. Rodríguez/
Examiner, Art Unit 3746   Primary Examiner, Art Unit 3741

ABC